



High Definition
Studio Monitors

HG3 ACTIVE STEREO CLOSE-FIELD MONITORING SYSTEM

OWNERS HANDBOOK





Designed in the USA and
assembled in the UK and the USA
to Trident Audio's strict specifications,
Trident Audio is manufactured under the direction
of and distributed exclusively by:

PMI AUDIO GROUP

USA: 1845 W. 169th Street
Gardena, CA 90247

tel: 310-323-9050 • fax: 310-323-9051

UK: Unit 4 Minerva Court, Woodland Industrial Estate
Torquay, TQ2 7BD

tel: +44 (0)1803-612700 • fax: +44 (0)1803-612009

email: info@trident-audio.com • www.trident-audio.com



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Important Safety Information



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO AVOID FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPARATUS TO WATER, RAIN OR MOISTURE.

NOTE — This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

These limits are designed to provide reasonable protection against harmful interference in a commercial/residential installation respectively. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by any combination of the following measures: (1) Relocate or reorient the receiving antenna (2) Increase the separation between the equipment and the receiver (3) Plug the equipment into an outlet on a circuit different from that to which the receiver is connected (4) Consult your dealer or experienced radio/television technician for additional assistance.

CAUTION — Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water. Do not expose to drips or splashes. Do not place any objects filled with liquids, such as vases, on the apparatus.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Do not install this apparatus in a confined space such as a book case or similar unit. Install only in racks designed for the purpose and in accordance with manufacturers' instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments and accessories specified by the manufacturer.



12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Apparatus designed with Class-I construction must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
16. This apparatus may be equipped with a single-pole, rocker-style AC mains power switch. If so this switch is located on the front panel and should remain readily accessible to the user.
17. The manufacturer reserves the right to change the technical specification of the product without prior notice.

Statement of RoHS Compliance

PMI Audio Group manufactures complete electronic products which are covered by the European Union's "Removal of Hazardous Substances" directive 2002/95/EC (RoHS). This directive seeks to eliminate toxic substances from the manufacturing process, such that when equipment is disposed of at the end of its life cycle, the materials it contains do not contaminate the environment and pose health risks. Banned substances are lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and poly-brominated diphenyl ethers (PBDE). Lead is used together with tin in solder connections to reduce the melting point of solder. Lead-free solder requires higher soldering temperatures which in turn places greater thermal stress on components.



PMI Audio Group takes seriously its obligations under the RoHS directive and insists that its factories use only components that are certified RoHS compliant, as well as lead-free solder. In a very few cases the necessary components may not yet be available to the world market but we work continuously to eliminate any such exceptions at the earliest opportunity. Our printed Circuit Boards (PCB's) and all soldered joints have been lead-free since 2005.

Statement of WEEE Policy

PMI Audio Group manufactures many complete electronic products which are covered by the European Union's "Waste Electric and Electronic Equipment" directive 2002/96/EC (WEEE). This directive seeks to ensure that waste electric and electronic equipment is disposed of in an environmentally responsible manner, at the end of its life cycle. PMI Audio Group takes seriously its obligations under this directive to take back WEEE-affected products and, from 13th August 2005, will mark all such products with the crossed-out wheeled bin symbol.



Business to Business products: PMI Audio Group will cost-neutrally take back WEEE-affected electric and electronic equipment in this category, from 1st January 2006. PMI Audio Group will work with disposal and recycling partners working within the EU. The waste electric and electronic equipment can then be turned over to a disposal and recycling companies in the countries concerned.

Business to Customer products: emerging electric and electronic equipment will be disposed of by local authorities' collection systems.

Dual Use products: this equipment will be disposed of by local authorities' collection systems.

Trident HG3 Close-Field Monitor System

The Concept

The unique cabinet configuration of the Trident HG3 Close Field Monitoring System is designed to reduce or eliminate many issues found in today's monitor systems. Some of these include:

- Limited Dispersion and Bandwidth
- Doppler Distortion
- Phase Distortion
- Inter-Modulation Distortion
- Cabinet Resonances
- Edge Diffraction and other problems associated with traditional monitor designs.

Bass Response

The use of a port can extend the usable response of a low frequency speaker, but below resonance, the speaker becomes uncontrolled and will flap wildly in conventional ported systems. The Trident HG3 system eliminated this problem by using a controlled electronic roll-off below the speaker's usable response. Separate subwoofers create additional problems by introducing phase cancellations at crossover, and exciting unwanted room nodes - eliminating the advantages of near field monitoring. Separate sub-woofer placement is a hit or miss proposition, guaranteed to cause problems in poorly treated rooms

Through the use of a dual voice coil sub-woofer, in each speaker box, and optimal tuning, the usable response is extended smoothly to almost 30 Hz in a very small enclosure. Each sub-woofer has its own 100 Watt dual MOS amplifier to insure clean, distortion free power. Further, the port is located outside the path of all active speaker components to insure freedom from Doppler distortion at very low frequencies.

Below 90 Hz, the HG3 bass response is essentially

omni-directional. From 90 Hz up to the crossover point of 320 Hz, the bass response narrows to about 180 degrees. Above 320 Hz, any large diameter speaker's dispersion narrows and the frequency response becomes ragged and uneven. Not a good thing.

Midrange Response

The most critical range in any monitor system is the midrange; that's where the voice resides, the bulk of the guitar's sound, and the overall detail of the music. It's strange that some manufacturers would split the vocal range in the middle, and assign part of the vocal to the woofer, and the other part of the critical vocal range to another speaker. It just doesn't make sense.

Part of the vocal (in a typical two-way system) is being modulated by pumping bass, and the other part is bouncing off the ends of the cabinet, creating edge diffractions. The result is smeared midrange, bad stereo imaging, and poor off axis response. The Trident HG3 uses crossover points set at 320 Hz and 3,500 Hz to eliminate those problems. The unique cabinet design takes care of the rest.

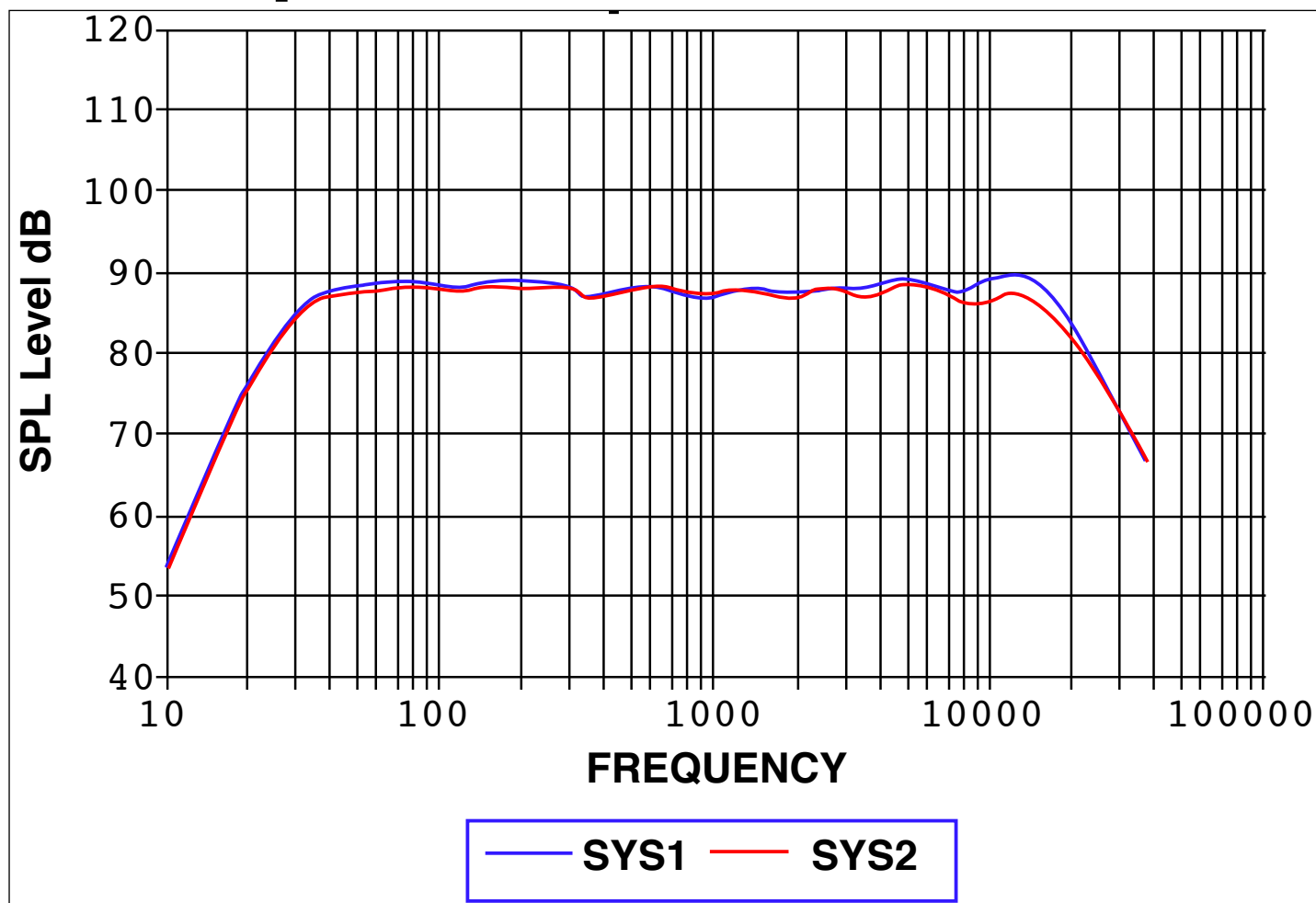
The Cylinder

The midrange speaker is mounted in an isolated, 6" diameter, damped, cylinder, to eliminate edge diffractions and woofer/cabinet resonance interactions. The cylinder also houses the 1-1/8" silk dome tweeter, its crossover, plus the mid and tweeter level controls. A separate 80 Watt amplifier drives the cylinder mid and treble components.

(continued on next page)



SPL Response in dB



Actual Trident HG3 Response Curves

The unique cylinder design lets the listener position the critical directional components exactly where needed, regardless of the distance between cabinets, without the need to move the main cabinet into a precarious balance position. The electrical connections are made through the ends of the cylinder; the cylinder can be turned in any direction, continuously, without damage. In fact, rotating the cylinder simply cleans the contacts.

The Amplifier

The Trident HG3 power amplifier section is made up of three identical 100 Watt MOS amplifier modules, noted for their low distortion, wide band width, and low noise levels. A unique "muting circuit" prevents thumps at turn on/off. Two modules are used to power the woofer section, and a separate module is used for the mids and highs.

Overall Distortion is typically around 0.05% and the noise level is typically below -104 dB. A unique

warning LED is built into the front panel of the Trident HG3 that changes from green to red as you begin to approach audible distortion levels (above 1%).

Three sets of inputs allow for both Balanced (XLR and TRS) and unbalanced (TS and RCA) connections. The dual-color LED on the front of the cabinet shows both power on (Green) and distortion (Red).

Trident HG3 Specifications

Frequency Response: 35 Hz - 19,500 Hz +/- 1.5 dB

Sensitivity (1Watt@1Meter): 89 dB

Typical Noise Level: -104 dB

Typical THD : 0.05%

Maximum Output: LF Section - 100 Watts RMS

Maximum Output: Mid/High Section - 40 Watts RMS.

Dimensions:

17-3/4" wide, 12-1/4" tall, 13-1/4" deep

Weight:

36.5 lbs

Positioning the Speakers

With other close-field speakers, positioning and maintaining an equilateral triangle between speakers and listener is critical for accurate imaging. The HG3 system is designed to provide accurate imaging with separations ranging from 3' to 10' (1 to 3 meters). Simply adjust the mid/high cylinder to the desired angle.

Keep in mind that close-field positioning is designed to let you hear the source before you hear any reflected sounds. In small rooms, we recommend 2' to 5' (1 to 2 meters) separation of the speakers.

Greater separation distances increase the chances of room reflections becoming a problem in small, untreated rooms.

The HG3's may be placed on a console meter bridge (good), or on speaker stands (best). The use of isolation pads underneath the speaker cabinets is highly recommended for best performance. The rotating mid/high cylinders are designed to be placed

inside the listening position. The ports should be on the outside, furthest from the listening position.

Mid/High Level Controls

The Mid Range/High Range Level Controls are normally set straight up (12 o'clock position) for flat response. They go from full off (5 o'clock position) to +2 dB (3 o'clock position). The extra 2 dB of boost lets you adjust for heavily damped rooms, wider or distant cabinet spacing, or as a "magnifier" to zoom in on critical mid or high frequency music components, or as fine adjustments, to compensate for your particular room conditions. For example, if your mixes sound



overly bright or midrangey on other systems, turn up the treble or the midrange on the HG3's slightly to compensate. Not enough midrange or treble? Turn the knobs down.

In some cases, an equilateral triangle between speakers and listener is not possible. When the speakers must be in an asymmetrical position, use the mid/high controls on the furthest speaker to boost the output to correct for center image drift.

Testing The HG3's
The Diana Krall
"Love Scenes"
album (produced
by Al Schmitt) on
Impulse (IMPD
233) provides a
great demonstration
of imaging, separa-
tion, and wide
range frequency re-
sponse. Any track

will do nicely, but Track 11 ("My Love Is") is outstanding for showing off the bass, midrange, and high frequency imaging of the HG3's. Listen especially to the even response of the upright bass, the rock steady center vocal imaging, and the sharp click of the finger snaps.

Cyrus Chestnut's "Earth Stories" album on Atlantic Jazz (82876-2) provides a great demonstration of wide range frequency response. Track 6 ("Cookdaddy's Perspective")

CONNECTING THE SPEAKERS

You can connect the HG3's using any of four different connection types: Balanced XLR or 1/4" TRS - or unbalanced 1/4" TS or RCA Phono cables. When using unbalanced connections, do not use cables over 12' (4m) to avoid induced hum

REAR PANEL FEATURES

Volume Control

The HG3 Volume control goes from full off (counterclockwise) to full on (clockwise). Using music you're familiar with, adjust your mixer inputs and outputs to 0dB, then adjust the HG3 Volume control till the music is at a comfortable listening level.

Audio Inputs

The rear panel of the unit allows the use of up to four different types of audio input connectors:

Input 1 allows for both Balanced (XLR, and 1/4" TRS), and Unbalanced (1/4" TS) connections. The balanced connectors use the standard industry convention of:

Pin 1 = ground,

Pin 2 = plus,

Pin 3 = minus (for XLR connectors)

and:

Tip = plus,

Ring = minus,

Sleeve = ground (for 1/4" TRS jacks)

Note: Balanced connections allows longer cable runs and reduces the possibility of induced hum and noise.

Input 1 may also be used with 1/4" TS jacks connected for unbalanced use:

Tip = plus,

Ring / Sleeve (grounded together.)

Input 2 allows the use of unbalanced RCA (phono-type) connections.

Note: Unbalanced cables can be used for shorter runs (under 10 feet.)

Power Cord Connector / Fuse Holder

Use only the recommended IEC Power Cord, and the recommended Fuse size and type. The actual power connector/fuse type may vary, depending on individual Country Power Code Requirements.

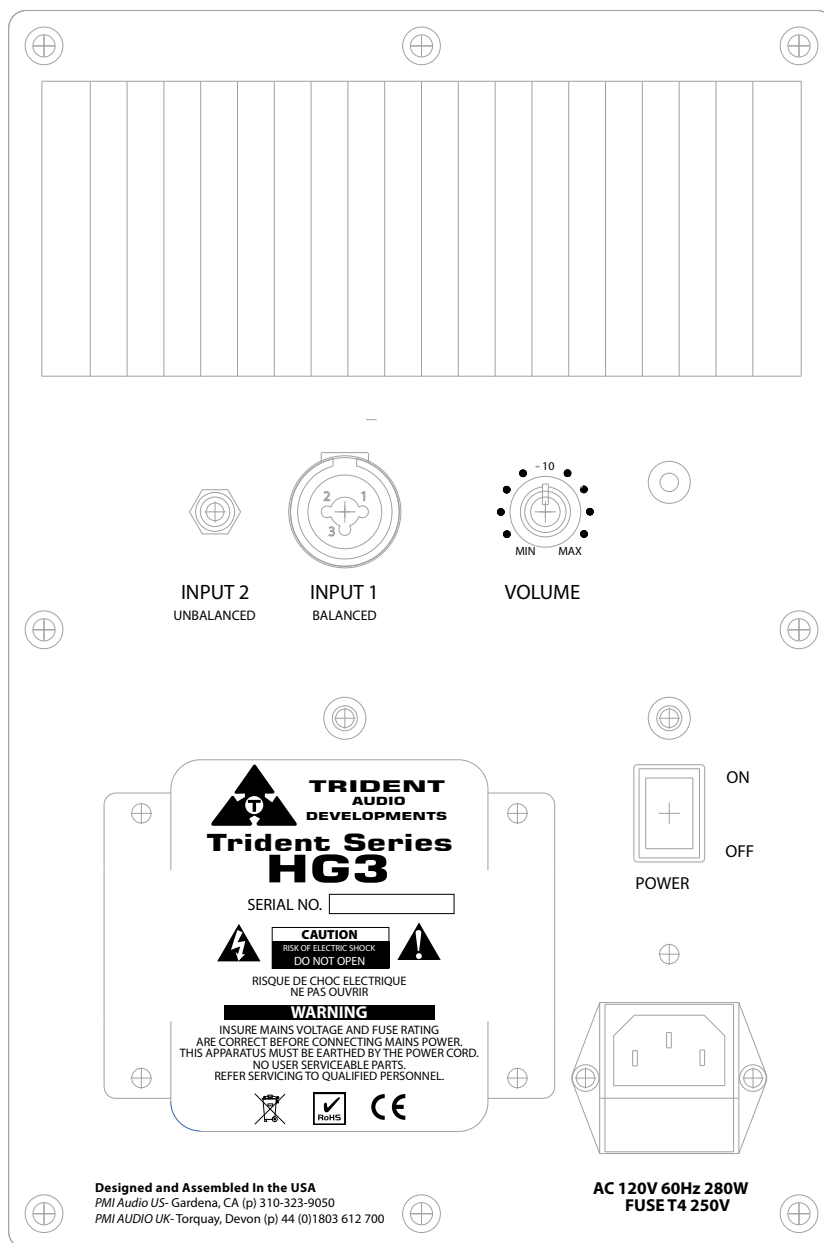
Power On/Off Switch

The HG3 Active Monitors feature a silent "Turn On/Off" switching circuit to prevent the possibility of transient damage, and to eliminate the annoying thump

heard from most powered speakers.

Heat Sink Warning

The Heat Sink is designed to draw heat away from the amplifier. It gets hot during normal operation. Keep fingers (and other sensitive body parts) away from the Heat Sinks. Do not touch with bare hand or body. Do not block free air flow over the Heat Sinks.



TROUBLE SHOOTING

1) No Power.

Make sure the unit is selected for the correct mains voltage via the selector incorporated in the mains inlet socket on the back of the unit. Check the fuse if the unit has been powered with the wrong voltage. Check there is a power reaching the unit.

2) The audio input doesn't work.

Is a suitable audio cable connected to the correct input on the back of the unit?

Is the rear Volume control is turned up?

Is there output from the mixer?

Notes

About The Design Team:



Harvey Gerst has been involved in the music industry in various capacities for over 55 years. From his work at JBL in their 50's and 60's "Golden Age", where he designed the famous "F"

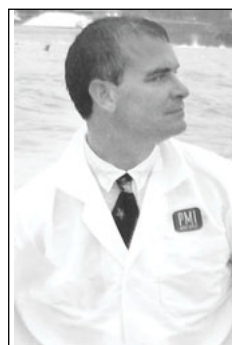
series of musical instrument speakers, to Acoustic Control, where he was responsible for the creation of their innovative guitar & bass amplifiers and the Black Widow guitar, to his work at IMC on the Jackson, Ross, and Charvel guitar amplifiers, or as a Platinum song writer for the Byrds, or as a guitar player in the group Sweetwater, to his work as a recording engineer and producer, he's always been in the right place at the right time with the right groundbreaking ideas. He considers the Trident HG3 to be his best design, and its innovations will lead to stellar future products.



Russ Allee has designed many of the most popular musical instrument amplifiers, played by music greats for 40 years. As a music industry consultant, his circuit wizardry is legendary in amplifiers made by

Alesis, Fender, Gibson, AMP, Acoustic Control, Eden, and Wharfedale Pro - to name a few. His new amplifier for the Trident HG3 sets new standards for low noise, high quality, and rugged reliability.

Brent Casey, lead designer and engineer of Studio Projects®, has been maintaining, designing, building and using audio gear for the last 28 years. He served as project manager and contributed to the design of the signature swivel movement on the HG3.



Limited Warranty

THIS PRODUCT IS FOR PROFESSIONAL USE ONLY

PMI Audio Group warrants that all products will be free from defects in material or workmanship:

A: For a period of one (1) year from the date of purchase (hereinafter the labor warranty period). PMI Audio Group will repair or replace this Product if determined to be defective. After the expiration of the labor warranty period, the Purchaser must pay labor charges.

B: In addition, PMI Audio Group will supply, at no charge, replacements for defective parts for a period of one (1) year from the date of purchase. During the labor warranty period, to repair the Product, the Purchaser must return the defective Product, freight prepaid, or deliver it to a PMI Audio Group Service Center. The Product to be repaired is to be returned in either its original carton or a similar package affording an equal degree of protection. PMI Audio Group will return the repaired Product freight prepaid to the Purchaser. PMI Audio Group is not obligated to provide the Purchaser with a substitute unit during the warranty period or at any time.

Conditions of Warranty

1. Notification of claims: Warranty Service: If Purchaser discovers that the Product has proven defective in material or workmanship, then written notice with a full explanation of the claim shall be given promptly by the Purchaser to PMI but all claims for warranty service must be made within the warranty period. If after investigation PMI determines that the reported problem was not covered by the warranty, Purchaser shall pay PMI for the cost of investigating the problem at it's the prevailing time-and-materials rate. No repair or replacement by Purchaser of any Product or part thereof shall extend the warranty period as to the entire Product. The specific warranty on the repaired part only shall be in effect for a period of ninety (90) days following repair or replacement of that part or the remaining period of the Product warranty, whichever is greater.

2. Exclusive Remedy: Acceptance: Purchaser's exclusive remedy and PMI's sole obligation is to supply (and pay for) all labor necessary to repair any product found to be defective within the warranty period and to supply, at no extra charge, new or rebuilt replacements for defective parts. If repair or replacement fails to remedy the defect, then and only in such an event, shall PMI exchange to Purchaser a new or reconditioned unit. Purchaser's failure to make a claim as provided in paragraph 1 above or continued use of the product shall constitute an unqualified acceptance of such Product and a waiver by Purchaser of all claims thereto.

3. Exceptions to Limited Warranty: PMI shall have no liability or obligation to Purchaser with respect to any Product subjected to abuse, negligence, accident, modification, failure of the end-user to follow the operating and maintenance procedures outlined in the users manual, attempted repair by non-qualified personnel, operation of the unit outside of the published environmental and electrical parameters, or if such Product's original identification (trademark, serial number) markings have been defaced, altered, or removed. PMI excludes from warranty coverage, Products sold AS IS and/or WITH ALL FAULTS and excludes used products which have not been sold by PMI to the purchaser. PMI also excludes from warranty coverage consumables such as fuses and batteries, tubes, etc

4. Proof of Purchase: The dealer's dated bill of sale must be retained as evidence of the date of purchase and to establish warranty eligibility.

5. Grey Market: All warranties apply only to PMI Audio Group Products purchased and used in the USA, and to PMI Audio UK Products purchased and used in the UK, EU and all other countries outside of the USA. All warranties apply only to PMI Audio Group/PMI Audio UK Products originally purchased from an authorized PMI Audio Group/PMI Audio UK dealer. PMI Audio Group/PMI Audio UK Product that was not purchased through an authorized and legitimate sales channel is considered "Grey Market". Warranties for PMI Audio Group/PMI Audio UK Products purchased outside their respective territories will be covered by the PMI Audio Group/PMI Audio UK Importer for that specific country or region. Products originally sold to the USA market and consequently resold overseas forfeit their warranty as do PMI Audio UK Products sold outside of the UK and Europe. American PMI Audio Group Dealers are expressly forbidden to export PMI Audio Group Products and PMI Audio UK Distributors and Dealers are expressly forbidden to export to North, South, Central and Latin America. "Grey Market" purchases are not covered by any warranty. In the case that a PMI Audio Group/PMI Audio UK Product must be returned to the factory from outside its respective territory, customer shall adhere to specific shipping, customs, and commercial invoicing instructions given with the Return Authorization as PMI Audio Group/PMI Audio UK will not be responsible for transportation costs or customs fees related to any importation or re-exportation charges whatsoever.

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USA: 1845 W. 169th Street, Gardena, CA 90247
tel: 310-323-9050 fax: 310-323-9051

UK: Unit 4 Minerva Court, Woodland Industrial Estate, Torquay, TQ2 7BD
tel: +44 (0)1803-612700 fax: +44 (0)1803-612009

email: info@trident-audio.com • www.trident-audio.com

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